

REMARKS

Claim Objections

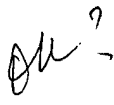
Claim 13 is objected to under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim. The Examiner states that "allyl methacrylate" does not further limit the fixing film-forming polymer of claim 12. This objection is respectfully traversed. Claim 13 does further limit the fixing film-forming polymer of claim 12 by:

- a) selecting n-butyl acrylate from the group (1) monomers,
- b) selecting acrylic acid and methacrylic acid from the group (2) monomers, and
- c) selecting allyl methacrylate as the bifunctional monomer..

Claims 12 and 25 are objected to because of the following informalities: the use of parenthetical expression "(Meth)" is considered informal. Appropriate correction has been made.

Claim Rejections - 35 USC §112

Claims 12-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states independent claims 12 and 25 fail to clearly set forth the metes and bounds of the invention, i.e., the number and nature of monomers that constitute the claimed polymer are not particularly pointed out. This has been rectified by replacing claims 12 and 25 with new claims 26 and 39, respectively, to clearly state that the film-forming branched block copolymer (a) contains three types of monomers, namely:

- i) non-ionic monomers of group (1),
 - (ii) anionic monomers of group (2), and
 - (iii) bifunctional units (i.e., monomers having two polymerizable double bonds such as allyl methacrylate $\text{CH}_2=\text{CH}-\text{CH}_2-\text{O}-\text{C}(\text{O})-\text{CH}=\text{CH}_2$).
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Claim Rejections - 35 USC §103

Claims 12-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Midha et al (U.S. Patent No. 5,986,015).

The Examiner states Midha et al teaches a cosmetic composition comprising polymers of monomers such as acrylic acid, methacrylic acid, acrylamide (see col. 6, line 63 to col. 7, line 47). Midha et al is also said to teach a hair styling gel comprising 2.5 weight percent of Graft copolymer 1.2 (which comprises methacrylic acid and tert-butyl acrylate), 0.5 weight percent Carbomar 940 (a thickening agent) (see particularly col. 17, lines 23-26, and col. 19, Example 17). Midha et al further is cited as teaching the addition of optional ingredients such as xanthan gum (a polymeric thickener) to its cosmetic hair composition (see col. 16, lines 14-26). Midha et al also is said to teach that the concentration of optional ingredients will typically and collectively range from 0.05% to 30% by weight of the composition (see particularly col. 14, lines 36-46). Finally, Midha et al is cited as showing that the cosmetic composition is suitable for application to hair (see col. 11, line 59 in particular).

The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the claimed branched block copolymer and the thickeners claimed herein in a cosmetic hair gel composition.

According to the Examiner, one of ordinary skill in the art would have been motivated to employ the claimed branched block copolymer and the thickeners claimed herein in a cosmetic hair gel composition because the polymer as well as the thickeners are taught by the Examiner's cited prior art to be used in cosmetic hair gel compositions. This rejection is respectfully traversed.

Midha et al discloses a method of making hydrophobic and hydrophilic graft polymers comprising:

- (a) reacting copolymerizable monomers to form an organic polymeric backbone with pendant organic halide moieties, and
- (b) reacting copolymerizable monomers with the organic halide moieties of the polymeric backbone by atom transfer free radical polymerization in the presence of a special catalyst.

This graft polymerization method leads to hydrophilic (i.e., water soluble) graft polymers or to hydrophobic (i.e., water-insoluble) graft polymers (see column 2, lines 48-59). Examples of hydrophilic graft polymers made in accordance with the disclosed method are listed at column 7, line 56 - column 8, line 19. Examples of hydrophobic graft polymers are listed separately at column 8, line 59 - column 9, line 11.

Midha et al does not disclose a method leading to graft polymers having both hydrophobic blocks and hydrophilic blocks as used in the present invention (see also WO 00/40628).

Furthermore, Midha et al discloses a very large number of hydrophobic and hydrophilic copolymerizable monomers, only a few of which (i.e., acrylic acid, methacrylic acid and C₁₋₁₈ alkyl acrylates) have been selected for preparation of the branched block copolymers used in the present invention. so what?

Midha et al discloses neither mono- or di-substituted acrylamide monomers, nor bifunctional units such as allyl methacrylate. ✓

Example 17 is believed to be the closest example to the present invention and is certainly representative of the Midha et al disclosure as recognized by the Examiner who relies heavily on this example. Midha et al discloses a hairstyling gel in Example 17 comprising 0.5 weight percent of an acrylic polymeric thickening agent (Carbomar 940). This hairstyling gel comprises 2.5 weight percent of Graft copolymer 1.2 which is a polymer having a 2-methoxyethyl acrylate/methacrylic acid/tert-butyl acrylate backbone grafted with a silicone macromonomer having a molecular weight of 10,000 and with poly(styrene/methacrylic acid). It is respectfully submitted that the graft copolymer is very different from the claimed branched block copolymers.

It is further pointed out that 0.5% of the acrylic polymeric thickener in Example 17 appears to provide a satisfactory viscosity, since Midha et al does not mention fluidizing of the thickened gel as observed by the inventor when he used the claimed branched block copolymers. In the absence of such a fluidization problem, one of ordinary skill in the art would have had no reason to add a second polymeric thickener (co-thickener) to the hairstyling gel of Example 17. Even assuming, *arguendo*, that one-of-ordinary-skill in the art would have chosen to further increase the viscosity of the gel by adding a co-thickener, there is nothing in Midha et al suggesting that this co-thickener should be a non-cellulosic co-thickener rather than a cellulosic

co-thickener. In this regard, the comparative examples in the present application show that the selection of a non-cellulosic co-thickener (Example A), rather than a cellulosic co-thickener (Example B), leads to an unexpectedly high viscosity.

One of ordinary skill in the art, considering Example 17 of Midha et al, therefore would have had to make the following changes to arrive at the present invention:

- a) replace the Graft copolymer 1.2 by a branched block copolymer of the present invention,
- b) add a second thickener (co-thickener) to the composition, and
- c) select the second thickener from the group of non-cellulosic thickeners.

The necessity making all of these changes clearly shows that the present invention would not have been obvious to one of ordinary skill in the art in view of Midha et al which totally lacks the requisite motivation for making such changes.

Attached hereto is a marked-up version of the changes made to the specification by the current Amendment. The attachment is captioned "Version with markings to show changes made."

The Commissioner is hereby authorized to charge any fees due in connection with the present Amendment to Deposit Account 19-4293.

In view of the foregoing, early and favorable action is respectfully requested.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Page 1, the last two paragraphs have been amended as follows:

--These copolymers, used in hairstyling compositions, exhibit a combination of physicochemical and cosmetic properties which make them excellent fixing polymers. Thus, these block copolymers spread easily on the hair, exhibit good adhesion to the hair [fibres] fibers, give a scarcely sticky feel, are easy to remove with a shampoo and give satisfactory fixing of good elasticity which is stable over time and which is particularly resistant to moisture.

However, it has been observed, during the formulation of hairstyling gels, that these novel polymers had the disadvantage of considerably [fluidifying] fluidizing most conventional thickening systems such as, for example, those based on acrylic copolymers or homopolymers.--

but

Page 2, the last two paragraphs have been amended as follows:

--The [applicant] inventor has found, after long research work, a particular combination of thickening polymers which make it possible to overcome the problems of [fluidization] fluidization and alteration of the properties of using the gel which are disclosed above.

The subject of the present invention is consequently cosmetic compositions containing in a cosmetically acceptable carrier:

- (a) at least one fixing film-forming polymer chosen from branched block copolymers comprising, as principal monomers, (1) at least one C₁₋₂₀ alkyl acrylate and/or at least one N-mono- or N,N-di-(C₂₋₁₂) [alkyl] (meth)acrylamide] alkylacrylamide or alkylmethacrylamide, and (2) acrylic acid and/or methacrylic acid,

New matter?

- (b) at least one thickening agent chosen from homopolymers and copolymers based on [(meth)acrylic] acrylic acid or methacrylic acid, which are [crosslinked] cross-linked or [noncrosslinked] non-cross-linked, and
- (c) at least one [cothickening] co-thickening agent chosen from [noncellulosic] non-cellulosic thickening polymers different from thickening agent (b).--

Page 3, the third and fourth paragraphs have been amended as follows:

--The branched block copolymers described above are provided, for example, under the names EX-SDR-26[®] and EX-SDR-45[®] by [the company] GOODRICH.

These copolymers have the following composition:

acrylic acid _ 26 to 36 mol%,
n-butyl acrylate _ 27.5 to 30.5 mol%,
methacrylic acid _ 33.3 to 45.3 mol%, and
allyl methacrylate _ 0.48 to 0.92 mol%.--

Page 3, the last paragraph has been amended as follows:

--The above fixing film-forming polymers are preferably used in anionic form, that is to say in the form of a salt resulting from the partial or complete neutralization of the [(meth)acrylic] acrylic or methacrylic acid groups. The neutralizing agent may be any physiologically acceptable inorganic or organic base which does not interfere in a--

New matter

Page 4, the first through fourth full paragraphs have been amended as follows:

--The cosmetic compositions of the present invention generally contain between 0.1 and 10% by weight, and preferably between 1 and 5% by weight, of fixing film-forming polymer[,] relative to the total weight of the final composition.

The thickening system used in the cosmetic compositions of the present invention necessarily comprises:

(b) at least one thickening polymer based on [(meth)acrylic] acrylic acid or methacrylic acid, and

(c) at least one noncellulosic thickening polymer [cothickening] co-thickening agent[,] different from the thickening polymer (b).

The thickening polymer (b) is chosen from poly(acrylic acid), poly(methacrylic acid), copolymers of acrylic acid and methacrylic acid, copolymers comprising units derived from acrylic acid and/or methacrylic acid as well as units derived from other acrylic or vinyl monomers such as C₁₋₃₀ alkyl acrylates, C₁₋₃₀ alkyl methacrylates, and vinyl acetate.

These acrylic homopolymers or copolymers may also be [crosslinked] cross-linked--

Page 5, the first paragraph has been amended as follows:

--There may be mentioned, by way of examples of such polymers, those marketed by [the company] GOODRICH under the names Carbopol[®] 940, Carbopol[®] 941, Carbopol[®] 980, Carbopol[®] 981, Carbopol[®] ETD 2001, Carbopol[®] ETD 2050, Carbopol[®] 2984, Carbopol[®] 5984 and Carbopol[®] Ultrez 10, by [the company] 3V under the names Synthalen[®] K, Synthalen[®] L and Synthalen[®] MS, and by [the company] PROTEX under the names Modarez[®] V1250 PX, Modarez[®] V2000 PX, Viscaron[®] A1600 PE and Viscaron[®] A700 PE.--

Page 5, replace the third paragraph as follows:

--Such copolymers are marketed, for example, by [the company] GOODRICH under the names Carbopol® 1342, Carbopol® 1382, Pemulen® TR1 and Pemulen® TR2.--

Page 5, the last two paragraphs have been amended as follows:

--For the production of a satisfactory thickening effect, that is to say for the production of a viscosity which is at least equal to 50 deviation units on a RHEOMAT 180 viscometer, rotor 3 (25°C, reading after 30 seconds), that is about 1.9 Pa.s, this first thickening constituent (b) should be combined with a second constituent (c) [playing] performing the role of [cothickening] co-thickening agent.

This [cothickening] co-thickening agent is chosen from thickening polymers different from the thickening agents (b), excluding the cellulosic thickening polymers.--

Page 6, the first through fourth paragraphs have been amended as follows:

--According to a preferred embodiment of the present invention, this [cothickening] co-thickening agent (c) is a polymer of [noncellulosic] non-cellulosic natural origin.

There may be mentioned by way of thickening polymers of natural origin which can be used as [cothickening] co-thickening agents guar, xanthan, scleroglucan, gelan, rhamsan and karaya gums, alginates, maltodextrin, starch and its derivatives, and carob flour, and the use in particular of guar gums such as that marketed under the name Jaguar® HP105 by [the company] RHODIA, or the xanthan gums such as those marketed under the names Keltrol® and Kelza® by [the company] MONSANTO, or under the name Rhodopol® by [the company] RHODIA, is preferred.

As synthetic [cothickening] co-thickening agents, there may be used, for example, polyethylene glycols and their derivatives, as well as the homopolymers and copolymers, [crosslinked] cross-linked or otherwise, based on acrylamide or methacrylamide such as the homopolymers of 2-acrylamido-2-methylpropane sulphonic acid, the copolymers of acrylamide or methacrylamide and of methacryloyloxyethyltrimethylammonium chloride, or the copolymers of acrylamide and 2-acrylamido-2-methylpropanesulphonic acid.

The concentration of the [cothickening] co-thickening agent in the cosmetic compositions according to the present invention is preferably between 0.05 and 2% by weight, and in particular between 0.1 and 1% by weight, relative to the total weight of the final composition.--

Page 7, the first full paragraph has been amended as follows:

--The cosmetic compositions of the present invention may contain, in addition, other ingredients commonly used in the cosmetic field and appropriate for the application envisaged. There may be mentioned, by way of example of such additives, for example colorants, pigments, perfumes, silicones which are volatile or otherwise, organomodified or otherwise, sunscreens, anionic, nonionic, cationic or amphoteric fixing polymers, different from those described above (such as for example polyvinylpyrrolidone), as long as they do not adversely affect the advantageous properties of the cosmetic compositions of the present invention.--

Page 8, the page has been amended as follows:

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	A	B	C
Fixing polymer ^{a)}	0.2	0.2	0.2
Acrylic thickening polymer ^{b)}	1.4	1.4	1.4
Noncellulosic <u>co-thickening</u> [cothickening] agent ^{c)}	0.3		
Cellulosic <u>co-thickening</u> [cothickening] agent ^{d)}		0.3	
Silicone ^{e)}	0.2	0.2	0.2
Ethanol at 96°	17.2	17.2	17.2
2-Amino-2-methyl-1-propanol	qs pH 7.5	qs pH 7.5	qs pH 7.5
Water	qs 100	qs 100	qs 100%
Viscosity^{f)}	2.540	1.480	1.535

- a) Ex-SDR-26[®], branched block copolymer of butyl acrylate and [(meth)acrylic] acrylic and methacrylic acids which is marketed by[the company] GOODRICH
- b) Carbopol[®] Ultrez 10, poly(acrylic acid) marketed by [the company] GOODRICH
- c) Jaguar[®] HP 105, guar gum marketed by [the company] RHODIA
- d) Klucel EF[®], hydroxypropyl cellulose (on average 22 mol of ethylene oxide and 23 mol of propylene oxide) marketed by [the company] AQUALON
- e) Mirasil[®] DMCO, polydimethylsiloxane marketed by [the company] RHODIA--

Page 9, the last two paragraphs have been amended as follows:

--This example shows that the hairstyling gel A according to the present invention possesses a substantially higher viscosity than the comparative hairstyling gel C free of [cothickening] co-thickening agent and containing, as sole thickening agent, an acrylic thickening polymer (Carbopol[®] Ultrez 10).

The comparison of the hairstyling gel A according to the present invention with the comparative hairstyling gel B containing an acrylic thickening polymer (Carbopol[®] Ultrez 10) combined with a cellulosic [cothickening] co-thickening agent (Klucel[®]) shows that the replacement of a cellulosic [cothickening] co-thickening agent with a [noncellulosic cothickening] non-cellulosic co-thickening agent spectacularly improves the viscosity of the hairstyling gel.--

IN THE CLAIMS:

Claims 12-25 have been replaced by new claims 26-39.